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FRONT COVER

Weeding Rice Beds

Painstaking hand labor is a traditional part of rice cultivation in the Far East. The rice seedlings shown in the cover photograph will later be transplanted by hand to the family's rice fields. (Photo courtesy of Rae Gilman Engebretson.)

BACK COVER

Threshing Rice and Corn

The photograph at the top shows Korean farmers threshing rice with a foot-pedal machine; the one at the bottom pictures a Salvadoran farmer flailing corn. (Photo at top courtesy of Rae Gilman Engebretson.)

NEWS NOTES

U. S. Shares Grasshopper-Control Experience With Iran

The United States is sharing with Iran its many years of experience in controlling grasshoppers, in an effort to help that country control a severe plague of locusts that has threatened food crops east of the Persian Gulf. The assistance is being extended through the Point Four program of technical cooperation, administered by the Department of State.

Insecticides, airplanes equipped with spraying apparatus, and a leading grasshopper-control expert of the Bureau of Entomology and Plant Quarantine of the United States Department of Agriculture were flown to Iran in April to help combat the plague, the worst in 80 years.

A new insecticide, aldrin, is being used in the campaign. This insecticide, a postwar development, is so effective that 2 ounces, mixed with a gallon of solvent such as fuel oil or kerosene, is sufficient to spray an acre. In 1950, aldrin was used successfully in Western States to control grasshoppers and in Southern States to control boll weevil.

Several small airplanes, of a type generally used in the United States in spraying field crops, were flown in large cargo planes to Iran with the insecticide.

Technical adviser of the mission is William B. Mabee, operations supervisor, Division of Grasshopper Control, EPQ, Elko, Nevada. Mr. Mabee is among the pioneers in the use of airplanes to spread insecticides upon field crops.

The insect threatening Iran is the desert locust, known as *Schistocerca gregaria*. It is peculiar to the Near East, though the migratory locust of Latin America, *Schistocerca cancellata*, is related to it. The Moroccan locust also is involved in the Iranian outbreak but to a lesser extent.

Credit for photos is given as follows: p. 116, BPISAE; p. 118, Embassy of India; pp. 120-121, National Film Board of Canada.

FOREIGN AGRICULTURE — ALICE FRAY NELSON, EDITOR

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Self-Help and Point Four*

by ARTHUR F. RAPER

To work effectively with the peoples of the Near East and Southeast Asia, we Americans—whether technician or otherwise—will need to understand and appreciate the many contributions that have come to us from them. This is the starting point for us if we seriously want to help them help themselves through the wider use of improved farming practices.

The giving of self-help is not an easy matter, for it involves acceptance on the part of the people of the other country as well as the offer of practical assistance on our part. Recent developments show how food production can be appreciably increased through science; but we must remember that most of the people in the Near East and Southeast Asia still assume that it is virtually impossible to increase food production. It will help if we will remember how new our own understanding is in this matter. Quite naturally, people who have for a long time been accustomed to crowded living conditions, low yields, and to religious and philosophic systems which serve to make life bearable under these conditions, often look upon change with misgivings. Their greatest fear is that things will get worse, and to them "change" often suggests just that possibility. Therefore, thorough consideration must be given to cultural and psychological factors. The twelve points below may prove helpful.

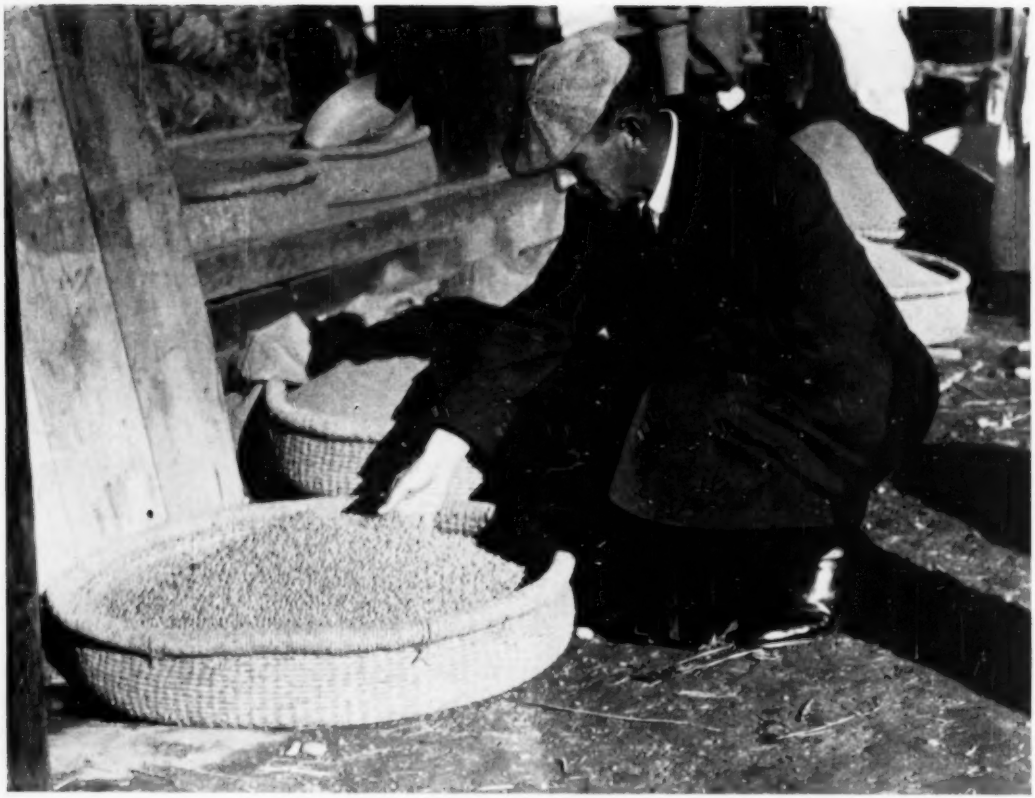
1. **Find a community of feeling.** Finding a community of feeling can perhaps best be done in such universal fields as those of food, shelter, clothing, taxes, debts, worship, raising of children, and the like. It will be well to let the people know that we appreciate the contribution which they have made in such realms as architecture, music, government, or other basic areas of our everyday living. Also, it will usually be easy enough to recognize the presence in our country of agricultural products which originated in the areas under consideration. Maybe one of our leading cereals or fruits or farmyard animals or fowls originated there. It does not make a great deal of difference what the community of feeling centers around, but it does matter tremendously that a community of feeling be found.

2. **Start where the people are.** Starting where people are is, of course, a well-established teaching principle among us already; in dealing with underdeveloped areas, it is necessary that special attention be given to such matters as the present level of technology, the type of transportation and communication facilities that are available, the degree of literacy in the country, and the main religious practices, family systems, and food habits. There are two other things we need to keep in mind if we are to start where they are: (1) the people live in villages, rather than in dispersed farmsteads as in the United States, and (2) nearly everywhere there are evidences of increasing interest among the people themselves as a national group. This has in recent years expressed itself widely in terms of the emergence of new nations (for instance, Pakistan, India, Burma, Indonesia, the Philippines, to name only those in Southeast Asia). This rising interest in nationalism may afford us a good opportunity to identify our country with theirs, for less than 200 years ago our own country became an independent nation. A day two hundred years ago seems far away to us, but to most of the people in the Near East and Southeast Asia, it is looked upon as a rather recent date.

3. **Try to understand why they do things the way they do.** There are numerous ready opportunities for us to appreciate different ways of doing things. Some of this understanding comes to us by way of our appreciation of Biblical conditions, while others will be more convincing on a commonsense basis. In fact, many of the present practices are akin to the way our own great grandparents lived as pioneers in this country or, still a little earlier, in Europe. For us to function effectively at this point, we will often need to use our imagina-

* This article is based in large part on materials prepared by Dr. Raper for inclusion in a recent report for the Department of State on an agricultural film program for countries of the Near East and Southeast Asia. Dr. Raper headed the agricultural staff that prepared the report.

Dr. Raper is Social Scientist, Bureau of Agricultural Economics.



People the world over have many things in common, including crops. This picture, taken in 1929, shows W. J. Morse, leading plant explorer of the U. S. Department of Agriculture, examining soybeans in Japan.

tions. Take, for example, the matter of harvesters' leaving heads for the gleaners. Upon analysis, this practice is a sort of elemental social security formula; it affords poor families a recognized way to secure food. The family shrine of theirs is not wholly foreign to our way of thinking, for the sacredness that centers around our hearth, as a symbol of home, centers around their family shrine. The fact that portions of rice are often offered in the local temple and also at the family shrine is less easy for us to comprehend, although not wholly outside our understanding, particularly some of our religious backgrounds, such as the oft-heard story of the offering of the lamb without blemish, or of a yet more modern symbol, the giving of ourselves to important tasks. In a community where there are more people than there is food, rice offered in the temple or the family shrine is in essence an offering of themselves.

It is also important, if we are to understand why they do things as they do, to realize that the whole outlook of the village dweller is very different from that of the person who lives on an American farmstead. The village dweller is not primarily an individual, but rather a member of a group. It seldom crosses the villager's mind to go to live on underdeveloped land by himself, or even with his family. This constitutes a real problem, for there is additional land that could be cultivated in parts of Southeast Asia. Also, it should be remembered that the structure of the family in these areas is basically different from that of our own, for whereas ours is limited primarily to that of a single generation (father, mother, and children) the family there is

more inclusive, contains grandparents and elderly kinsmen, and is usually highly stable; in many areas, the older a person becomes the greater is his status.

It may be that some of the most "strange" customs of the people came out of situations which we ourselves would recognize as highly practical. For example, could it just be possible that the prohibition on the eating of pork by the Moslems, and other groups, originated from an early realization that pork contains trichinosis. Should they, for instance, have found it was harmful to eat pork, the enforcement of the prohibition would rather naturally have been carried out by religious practices. The very fact that there is a specific prohibition suggests that at some earlier time the prohibited food was a staple item of the people's diet. The point is not that we are under the necessity of rationalizing every practice the people might follow, but rather that our approach to the people gives them assurance that we realize they may have good reasons for doing things the way they do them.

4. Carry on activities in which the people themselves are interested. It is our impression that we need to spend more time finding out what the people want for themselves, and less time deciding among ourselves what we think they need. If this basic principle is adhered to, there is little likelihood that we will fail in our desires, for our technical self-help services will be wanted by them. This point in a way summarizes most of what has been mentioned in the three earlier points.

Usually, the activities in which the villagers are interested will be concrete, such as control of pests that injure crops or animals. It appears that the rinderpest control program, for example, in Thailand and Burma has received enthusiastic local support; the reason is a simple one: farmers rely upon water buffaloes and bullocks for draft power, and the prevention of the death of their animal is appreciated by the farm family. Equally concrete is the control of insects in rice and other crops. Seed selection, too, will likely rate high, because villagers prefer rust-free and smut-free varieties. Within the range of seed selection is the matter of securing uniform maturation through selection; at present some of the rice stalks get ripe well ahead of others, interfering with effective harvesting. There might be local interest, too, in a better method of planting the seeds. This is a need in the Near East, even though archeologists have recently found a farmer's bulletin (on stones) 3,700 years old that emphasized the correct way of planting small grain: two fingers deep, the seed to be distributed through a spout to the base of the plow. In this area today, however, most of the small grain is still sown broadcast, and much of the seed is wasted by getting covered too deep or not deep enough.

Conservation of water is of interest, especially in the dry portions of the Near East. Also, it would likely be easy to arouse widespread interest in improving threshing practices, such as the small foot-pedal threshing machines now in general use in Japan and Formosa. Other practical techniques in which interest might be expected are grain storage facilities which keep out the rats, and cleaning practices which remove the sand and other foreign matter. Maybe, too, fertilization practices could become areas of interest, for now practically nowhere in the Near East and Southeast Asia is effective use being made of either compost or commercial fertilizer. Practices already well established in Japan and Formosa seem to offer much promise.

5. Help the people believe they can improve their situation. This point, like the first one, will perhaps best be centered on very elemental human desires, such as helping villagers believe that a larger percentage of the children can escape death in infancy. There will probably be interest, too, in the possibility that the amount of hard manual work in rice paddy farming can be lessened. It needs to be remembered always that there will be little incentive on the part of the village people to apply themselves to their problems unless they come to believe that they can improve their situation. That is why the initial performance had best be centered upon very elemental human situations. Once there is the belief that improvement can be made—and even the most likely areas of life will not be easy—then the way is open for further development. It is well for us to keep in mind that where there is little hope, there is little endeavor. The democratic goal of more self-direction and more responsible participation for the villagers lies ahead only when the villagers have come to see that they can really improve their situation.

6. Be content with small beginnings. The promoters of self-help activities must be prepared for a tardy response from the villagers. Small changes, even after a considerable period of work,

should be cherished. The first innovation is the most difficult. Quite naturally, villagers who have lived at the same place and in the same ways for a long time have developed a close-knit culture, which is generally intolerant of change. Folk cultures everywhere are characterized by stability; the simple cultures that were not stable have not survived. Once the first change has been made in a folk culture, other changes can likely be brought about more or less as a matter of course. Since the first change tends to set the direction of later developments, it is of critical importance that the initial self-help activities be launched with an understanding of the likely effects of success of the program upon the culture as a whole. Again, it will be helpful if we will remember a basic fact about our own western civilization: It has been cumulative, and therefore progressive. This needs to be kept in mind, especially by technicians responsible for the promotion of self-help activities in areas where the people have had little belief that progress was possible. The current interest in nationalistic movements among the peoples of the Near East and Southeast Asia clearly indicate that the cake of custom is cracking. It is now our opportunity to help point the direction of the change toward higher levels of living through self-help activities, and small initial changes are of first importance.

7. **Use the villagers' own organizations.** We will need to give careful attention to doing things in ways that fit in with the local organizational framework. It takes much less energy to use existing organizations than to set up new ones. Furthermore, when we use existing organizations, the leaders of the cooperating groups serve as sponsors of the activities we are promoting, and so assure local participation. Furthermore, the very genius of self-help lies in utilizing existing physical and social resources, which include established group relationships no less than soil fertility. If the cooperation of local groups and leaders cannot be secured, there is great likelihood that our activity will be faced with organized opposition or at any rate fail to get the endorsements needed to carry on successfully. We need to realize that the cooperation of existing organized groups is essential to any self-help activity, for the most important thing that needs to be accomplished is to secure the active interest of the rank and file of villagers who can be reached most easily through their own local leaders. At the national level, it is equally important that activities be launched and carried forward in cooperation with the established organizations, public and private.

8. **Watch the villagers' pace, and keep in step with them.** We need to remember how different are our backgrounds and experiences from those of the people with whom we are working. We will need to allow time for questions to be formulated and asked. The villager will take little for granted. Rather he will want to see every step of each activity. In this connection, it will be well for us to remember that the villager knows practically nothing about modern conveniences and the democratic process. It takes time to get things done in our fluid society, and a much longer time among peoples whose way of life has been generally static for centuries. All of these things must be kept in mind by us when we are deciding the pace at which we can

Farm village in India. Farmers of the Near East and Southeast Asia traditionally live in villages rather than on individual farms.

hope to move when working with the villagers.

9. **Place responsibility on the villagers as soon as they can take it.** The self-help plan operates best when the person being helped knows that he will be given full recognition for any progress he makes. This approach is most important; otherwise the villagers will sense that the program is not designed primarily for them. If the villagers are given all the responsibility they can take, the persons who initiated the project are free to move elsewhere and start anew. Usually, a gradual withdrawal of the initial trained supervisory personnel is desirable. Otherwise, the project may fail for lack of continued application of the basic principles upon which the success of the project rests. Also, there is often equipment which can readily become unusable without the supervision of someone who knows how to make minor repairs and otherwise maintain it. When all of this is taken into consideration, it is important that the whole responsibility be left with the villagers as soon as they can carry on, even though the supervisory personnel may need to return periodically to make certain that everything is moving along as planned.

10. **Deal with the villager as an equal.** Dealing with the villager as an equal is perhaps the most basic point yet made. It is doubtful whether anything can be done effectively on any other basis. The equalitarian approach, basic in all education, is especially needed when dealing with the villager, for he often looks with suspicion upon the outsider, who is nearly always better dressed than himself. His experience with colonialism, no less than with local moneylenders, has indelibly impressed upon his mind the likelihood of being treated as an unequal by well-groomed people. Not only is it good educational procedure to deal with the villager as an equal, but it is the only possible procedure, for unless we consider him an equal and, as such, capable of helping himself, we no longer have any foundation for our self-help program. Beyond all this, in view of the rising interest in nationalism among underdeveloped peoples, there is now little likelihood that the villagers will respond to any other approach. Moreover, to do otherwise would betray our own values on democracy and fair play and the emphasis we put on the development of independent personalities.

11. **Expect growing pains.** The villagers themselves, as they begin to have hope, will naturally want to have their own way. We may expect at times to find them somewhat demanding and wanting to assume more responsibility than they are able to carry out. These evidences of growing pains should be greatly welcomed by us, for they, more than anything else, demonstrate that the villagers are beginning to want to do things for themselves. The person who is not prepared to adjust himself to these growing desires of the villagers to help themselves should not have responsibility in promoting self-help programs. The truth is, a self-help project is a failure if no evidences of growing pains are discovered.

12. **Don't expect thanks from the people being helped.** In the very nature of the situation, the recipients of assistance are seldom in a position to offer open appreciation. Rather, they are usually aware that they are making headway belatedly and therefore will often be somewhat on the defensive. We should keep this point squarely in mind, lest we feel that we have failed because the villagers do not seem to appreciate what we are doing. In the long run the villagers will be thankful, but usually long after the time when the self-help demonstrations have proved their initial effectiveness. Much of the same type of situation prevails in human relations everywhere, even in our own families—for children usually become grateful for what their parents have done only after they themselves have become parents. A basic understanding of why the villagers will not give immediate thanks for the assistance given them will help the on-the-job promoters of self-help projects through the dynamic, but often tedious, period of growing pains.

Finally, it is important that we realize that we defeat our ends of raising the levels of living in retarded areas through peaceful means if our efforts merely increase the unrest among the villagers. It is necessary, therefore, that, wherever we create new desires for goods and services, we at the same time make clear how these new desires can be satisfied. The reasons why some new desires cannot be satisfied immediately must be fully and frankly explained. Promises of later realization of these felt needs must be made with great care, and, once made, no effort spared to assure their convincing fulfillment. In short, we need to convince the villagers that they can raise their levels of living by concrete projects that we are ready and able to help them begin to put into operation.

Canada's Eastern Arctic

Canada's Eastern Arctic, stretching from the Hudson Bay to the Arctic and Atlantic Oceans, is one of the world's sparsely populated areas. There are 115 square miles for each of the 6,000 Eskimos and 150 white settlers who live in this corner of Canada. Much of it is unoccupied; the white settlers live at trading posts, and the Eskimos drift across the vast territory in search of game and fish, building their temporary homes of hides or snow wherever game is most plentiful. Where hunting is good, a village is established and occupied for several seasons.

Seals, walrus, and white whales provide Eskimos with food, oil for cooking, heat, and light, and feed for dogs, the age-old source of draft power. Skins from seals, caribou, and sometimes polar bears are used in making clothing, bedding, tents, and small boats.

Some of their food and equipment is given to residents by the Government. This aid comes from the family allowance payments made on behalf of all children in Canada. Since Eskimos have little use for actual currency, they receive whatever is most needed by the Eskimo family group. The Canadian Government has set up hospitals in the area, too, and has placed medical kits in all the trading posts.

Eskimo family in its summer home, a tent made from skins.

An Eskimo can build a home from snow in about an hour

Eskimo hunter preparing to harpoon a seal.

James Bay native girl "fleshing" a sealskin.

Government doctor, making one of his periodic visits to an Eskimo village at Port Harrison, Quebec.

West Europe's Food Consumption And Food Self-Sufficiency*

Food production and consumption in West Europe have shown a remarkable recovery in recent years. All except a few countries have recovered the quantitative and qualitative consumption levels they had before the war. In fact, in some countries, there have even been improvements in the nutritional quality of the diet, mainly through larger consumption of fresh milk and vegetables.

Many of these countries, too, are more self-sufficient in food than they were before the war. Larger crop production for direct food uses as well as a decreased dependence on imported feedstuffs contributes to this result. Part of the increased production, however, is the result of greater application of fertilizer, some of which is imported, and of increased mechanization, which is dependent on imported fuel oil. To this extent the countries' dependence upon foreign sources has merely been shifted from agricultural products to industrial supplies for agriculture.

These are a few of the findings of work projects that OFAR's European Division has been carrying on for a decade on food production and consumption levels in the European countries. The present article gives a condensed account of this work.

Estimates of Consumption Levels

Table 1 gives OFAR's estimates of the consumption of foodstuffs and of total energy in terms of calories for the ERP countries, both for the prewar period and for three postwar seasons.[1] It shows the unsatisfactory levels of consumption that prevailed in 1947–48 and the great recovery that took place in the two subsequent years. There was further improvement in 1950–51, mainly through an expansion in the consumption of livestock products, which had lagged behind. Few countries have not recovered the quantitative and qualitative food consumption levels they had before the war, among them Western Germany and Austria. In fact there have, in some countries, even been improvements in the nutritional quality of the diet, especially through larger consumption of fresh milk in northern and northwestern Europe.

Generally, consumption of vegetables in Western Europe seems to be larger than prewar, notably in the countries where consumption before the war was relatively low. The intake of visible fats by 1949–50 had been almost or fully restored to prewar per capita levels in most countries, except Austria, Western Germany, and Denmark, while consumption of meat remained below prewar in most countries, especially Western Germany, Austria, the United Kingdom, the Netherlands, and Switzerland.

In the countries that before the war had a low or medium consumption of sugar, that level has been mostly restored; it is only in Denmark, Norway, and the United Kingdom that present consumption is still considerably below the high prewar standard. Most countries immediately after the war—and some of them during the war—consumed more grain products and potatoes per capita to compensate for the deficiency of foodstuffs of animal origin. Conversely, the consumption of grain products and potatoes more recently has been on the decline as the supply of livestock products has increased. It is, however, only in a few favored areas, characterized by a high food standard even in the past few years—Belgium, Sweden, and Switzerland—that consumption of grain products has actually been reduced to below the prewar level. Consumption of potatoes in most countries remains above prewar.

Quantity-Quality Index of Consumption

The calculations of consumption of individual foodstuffs, and of total food consumption in terms of calories, have been supplemented, in table 2, by a price-weighted index which represents a quantity-quality measurement of food consumption. In a number of cases such an index is preferable to the simple calorie measurement, which does not give consideration to the qualitative composition of the energy supply. As against comparisons for individual foodstuffs consumed, the combined quantity-quality measurement has the advantage of reducing total consumption to a common denominator. The index measures quantity by taking the poundage of the individual foodstuffs consumed; and it measures quality through weighting each foodstuff by price. In general the quantity-quality index indicates greater deficits in food consumption, compared with

* Prepared by the European Division, Regional Investigations Branch, OFAR. For the Division's work on indices of agricultural production see the January 1951 issue of *Foreign Agriculture*.

[1] OFAR's food balances, which underlie these estimates, and an account of the methods used, will be shortly published as a monograph by the Department of Agriculture.

TABLE I.—*ERP countries*[1]*: Postwar food consumption levels with comparisons*[2]
[excluding alcoholic beverages]

Country	Population	Grain as flour	Sugar, refined	Potatoes	Dry legumes	Other vegetables[3]	Fruit and nuts[4]	Meat, carcass wt.	Fish, landed wt.	Fats (fat content)	Cheese	Whole milk	Eggs	Total
	1,000	*Kilograms per year*	*Kilograms per year*	*Kilograms per year*	*Kilograms per year*	*Kilograms per year*	*Kilograms per year*	*Kilograms per year*	*Kilograms per year*	*Kilograms per year*	*Kilograms per year*	*Kilograms per year*	*Kilograms per year*	*Calories per day*
Austria:														
Prewar	6,760	127	24	92	2	58	41	49	1	16	5	214	7	2,970
1947–48	7,000	137	12	129	4	51	36	27	3	10	2	108	3	2,440
1948–49	7,050	142	23	128	2	64	46	27	2	14	2	123	4	2,730
1949–50	7,100	136	23	118	1	64	44	31	2	16	3	136	4	2,760
Belgium:														
Prewar	8,330	126	27	180	3	38	43	44	11	18	5	82	11	2,935
1947–48	8,400	120	28	175	3	44	76	45	16	18	4	98	11	2,930
1948–49	8,600	115	28	186	2	45	46	43	12	21	4	105	12	2,965
1949–50	8,625	114	28	180	3	51	68	41	13	21	4	105	11	2,965
Denmark:														
Prewar	3,706	97	50	119	1	68	31	78	14	24	6	175	8	3,330
1947–48	4,170	105	34	134	1	71	36	64	14	15	10	186	12	3,030
1948–49	4,211	103	38	140	1	84	64	67	19	18	9	177	10	3,190
1949–50	4,250	102	40	135	1	72	48	68	24	19	7	178	10	3,170
France:														
Prewar[5]	41,200	126	24	134	6	100	32	58	9	16	6	92	9	2,955
1947–48[6]	40,800	125	15	154	5	97	37	52	9	12	5	78	9	2,600
1948–49	41,950	131	20	143	4	100	38	56	9	14	6	92	9	2,860
1949–50	42,300	126	24	138	4	95	40	57	10	14	6	97	9	2,900
Western Germany:														
Prewar[7]	38,700	108	24	181	2	48	46	48	13	23	4	136	7	2,985
1947–48[8]	48,100	140	15	185	3	51	36	20	12	7	3	75	3	2,365
1948–49[9]	49,050	134	20	237	3	62	28	24	16	10	3	79	4	2,645
1949–50[9]	49,650	124	23	200	2	48	44	31	12	16	4	98	5	2,760
Greece:														
Prewar	6,793	154	10	14	12	71	47	20	10	17	9	40	4	2,500
1947–48	7,730	153	8	30	11	67	57	14	8	14	6	37	3	2,415
1948–49	7,810	156	10	34	11	86	59	15	10	14	6	43	3	2,475
1949–50	7,890	153	9	41	10	91	63	16	11	15	6	48	3	2,510
Ireland:														
Prewar	2,970	135	38	197	1	57	30	52	5	14	[10]	152	15	3,250
1947–48	3,000	136	32	212	1	57	33	52	6	16	1	173	12	3,255
1948–49	3,000	137	35	197	1	55	34	52	7	16	1	175	13	3,265
1949–50	3,000	133	37	188	1	53	38	53	7	17	1	182	13	3,300
Italy:														
Prewar	42,600	168	7	36	12	67	41	20	6	12	5	37	7	2,560
1947–48	45,540	164	7	39	11	76	50	15	5	9	4	41	6	2,425
1948–49	45,870	171	10	41	12	72	38	16	7	10	5	49	6	2,550
1949–50	46,120	170	10	36	11	72	41	17	7	10	5	50	6	2,550
Netherlands:														
Prewar	8,500	102	34	130	3	60	56	40	11	21	7	145	9	2,920
1947–48	9,600	116	30	163	3	43	43	23	15	18	5	146	4	2,765
1948–49	9,850	99	32	183	2	55	44	24	11	20	6	173	5	2,785
1949–50	10,016	99	36	150	3	63	38	30	11	23	6	164	6	2,860
Norway:														
Prewar	2,880	104	33	117	2	31	35	40	38	22	8	184	7	2,970
1947–48	3,150	122	22	119	1	36	28	29	48	20	4	225	4	2,885
1948–49	3,200	120	24	125	2	50	31	29	48	22	6	231	5	3,040
1949–50	3,250	111	26	120	2	29	21	34	46	22	7	234	7	3,025
Continental Portugal:														
Prewar	6,750	127	9	75	10	59	61	21	34	13	1	17	3	2,280
1947–48	7,760	121	11	104	10	59	59	18	32	12	1	14	2	2,245
1948–49	7,850	123	11	110	8	58	51	19	31	12	1	14	2	2,250
1949–50	7,960	124	11	95	8	54	58	18	34	13	1	15	2	2,260
Sweden:														
Prewar	6,249	98	43	138	2	23	41	48	22	18	6	242	8	3,080
1947–48	6,900	86	42	139	1	20	35	49	26	18	7	244	11	2,960
1948–49	6,925	89	44	136	2	27	51	48	21	20	8	250	10	3,125
1949–50	6,986	86	46	129	2	26	65	52	20	21	8	250	10	3,200
Switzerland:														
Prewar	4,170	115	38	89	2	72	74	48	2	15	8	254	9	3,150
1947–48	4,590	121	38	98	2	70	88	36	2	15	9	232	8	3,095
1948–49	4,630	118	35	97	2	72	92	36	2	16	10	242	9	3,090
1949–50	4,660	112	37	93	2	67	96	37	2	18	9	242	9	3,090
United Kingdom:														
Prewar	47,200	95	[11]49	79	3	61	58	68	21	21	4	121	11	3,075
1947–48	49,500	113	[11]38	114	2	61	46	49	24	17	4	157	10	2,940
1948–49	50,150	114	[11]40	122	3	79	42	45	22	19	4	162	10	3,050
1949–50	50,400	105	[11]37	121	3	58	46	55	20	20	5	166	10	3,035
Turkey:														
Prewar	16,800	193	6	6	10	48	62	16	4	9	5	33	3	2,585
1947–48	19,400	189	6	10	7	62	36	15	4	10	4	32	3	2,460
1948–49	19,625	194	8	15	10	65	60	16	4	10	4	36	2	2,630
1949–50	19,800	190	8	16	7	61	71	15	5	11	4	34	2	2,620
ERP countries, excluding Turkey,[1] (weighted average):														
Prewar	226,608	123	27	107	6	65	46	47	13	18	5	107	8	2,895
1947–48	246,240	132	20	124	5	65	45	34	14	12	4	100	7	2,625
1948–49	250,146	133	24	136	5	73	40	35	14	14	4	108	7	2,790
1949–50	252,207	127	25	126	5	65	46	39	13	16	5	113	8	2,820
ERP countries, including Turkey,[1] (weighted average):														
Prewar	243,408	128	26	100	6	64	47	45	12	17	5	102	8	2,870
1947–48	265,640	136	20	116	5	65	44	32	13	12	4	95	6	2,610
1948–49	269,771	137	23	127	5	72	42	33	13	14	4	102	7	2,785
1949–50	272,007	132	24	118	5	65	48	37	13	16	5	108	7	2,810

Office of Foreign Agricultural Relations, April 1951. Calorie conversions are based on FAO factors. 1 kilogram equals 2.2 pounds.
[1] Excluding Luxembourg and Iceland. [2] Consumption levels as implied by official or OFAR production estimates, foreign trade data as per official statistics where available, and OFAR utilization estimates. [3] Fruit in terms of fresh; nuts on shelled basis. [4] Excluding the Saar. [5] Including the Saar. [6] Tentative estimate for Western Germany excluding the Saar and Western Sectors of Berlin. [7] Excluding the Saar but including the Western Sectors of Berlin. [8] Less than 0.5 kilogram. [9] Including glucose in terms of sugar.

prewar, in the countries where consumption had declined most, than indicated by a comparison of calories alone.

The quantity-quality index of food consumption has been applied so as to compare consumption developments for each country from one year to the other, and in relation to a base period. The index could also have been so constructed as to compare the quantity-quality levels of food consumption—say, in a base period—among the various countries. This, however, we refrained from doing. Comparisons among countries of the consumption of individual foodstuffs show clearly enough the differences that exist with respect to items that are, or may be, considered as being particularly valuable in the diet, or characteristic of higher levels of living. It is then left for the individual observer's judgment to decide whether a stated difference is significant, indicative of higher or lower nutritional levels, or characteristic of higher or lower levels of living in the countries compared. On the other hand, a quantity-quality index for each country, related to a selected level, and therefore giving comparisons for all countries among themselves, would imply without qualification the existence of superior quantity-quality combinations where the index is high, and of inferior quantity-quality combinations where the index is low. In view of the controversial character of such judgments we chose not to present this type of calculation.

The price-weights used for the computations were derived from a discriminating inspection of retail price relationships in six European countries,[2] checked against and partly adjusted in the light of relationships obtaining in the United States.[3] The retail price of flour, as flour or in bread or in any other farinaceous product, was selected as the base price, with the prices of all other commodities expressed as a percentage of this base. One scale of price weights was used for all countries included in the study and uniformly applied to the estimates of quantities consumed as shown in table 1.[4] The weights are as follows:

Grain as flour	100	Meat offal	[1] 250
Sugar (refined)	150	Fish	[2] 200
Potatoes	30	Butter	700
Dry legumes	150	Slaughter fats	400
Other vegetables	50	Vegetable oils	300
Fruits and nuts	115	Marine oils	300
Beef, veal, pork, mutton, lamb and poultry meat	[1] 400	Cheese	400
Other meat	[1] 300	Whole milk (fresh)	70
		Eggs	[3] 500

[1] Less 10 percent for distribution waste since quantities are given in terms of carcass weight.

[2] Less 50 percent for waste since quantities are given in terms of landed weight.

[3] Less 10 percent for distribution waste.

The comparisons shown in the table make it possible to see, side-by-side with the developments in the per capita energy supply, the developments in the combined quantity-quality index. It should be noted that the combined quantity-quality index, which is a price-weighted measurement, is the only one comparable with the usually quoted index of per capita food consumption in the United States. In recent years, United States food supplies per person, on a price-weighted basis, have been around 112 percent of the 1935–39 average. It is interesting to note that in relatively well-to-do countries, such as Belgium and Sweden, the quantity-quality index of per capita food consumption has also exceeded 100 percent in the postwar period, and in 1949–50 stood at about 10 percent above the prewar average. The calorie supply in these countries, on the other hand, exceeds prewar only to a small extent. (In the United States, it is just about at the prewar level.)

In the rest of the ERP areas, consumption on a price-weighted basis had reached approximately the prewar level by 1950 in countries containing about half the total population, but was still below or considerably below in countries containing the other half. Food supplies per person in 1949–50 in Denmark, France, Norway, Switzerland, and the Mediterranean countries were at, or almost at, the level of the prewar index. The index for the United Kingdom for 1949–50 was still 6 percent below prewar, for the Netherlands 9 percent below prewar, for Western Germany and Austria 16 or 17 percent below prewar. Conversely, if we look for comparison purposes at the simple calorie index, we find that in most countries the calorie supply per person, by 1949–50, had approximately reached the prewar level. The exceptions were Western Germany and

[2] United Kingdom, France, Germany, Italy, Denmark, and Austria as per official retail price statistics.

[3] "Consumption of Food in the United States, 1909–48," Misc. Pub. No. 691, U. S. Dept. Agr., 1949.

[4] The items "meat" and "fats" were broken down into the component parts for which price relationships are given in the text tabulation. The fat items were given in terms of product weight, not pure fat.

TABLE 2.—*ERP countries: Quantity-quality index of food consumption*

[Value of consumption, at constant prices, per person][1]

Country	Quantity-quality index				Simple calorie index			
	Prewar	1947-48	1948-49	1949-50	Prewar	1947-48	1948-49	1949-50
Austria	100	82	80	83	100	82	92	93
Belgium	100	108	105	107	100	100	101	101
Denmark	100	94	99	97	100	91	96	95
France	100	92	99	101	100	88	97	98
Western Germany	100	69	75	84	100	79	89	92
Greece	100	92	97	101	100	97	99	100
Ireland	100	104	104	107	100	100	100	102
Italy	100	94	97	99	100	95	100	100
Netherlands	100	85	89	91	100	95	96	98
Norway	100	91	99	100	100	97	103	102
Portugal (Continental)	100	96	95	96	100	98	99	99
Sweden	100	102	106	111	100	96	102	104
Switzerland	100	95	97	98	100	98	98	98
United Kingdom	100	89	91	94	100	96	99	99
Total ERP area[2] (weighted average)	100	87	91	95	100	91	96	97

Office of Foreign Agricultural Relations, Apr. 1951.

[1] For explanations of construction, see text.

[2] Excl. Luxembourg, Iceland, and Turkey.

TABLE 3.—*ERP countries: Degrees of food self-sufficiency (production from domestic resources in percent of consumption)*

Country	Prewar[1]	Postwar[2]
	Percent	*Percent*
Austria	68	57
Belgium	43	56
Denmark	106	125
France	83	87
Western Germany (excl. Saar)[3]	68	63 (66)[4]
Greece	78	72
Ireland	73	84
Italy	95	86
Netherlands	65	73
Norway[5]	48	56
Continental Portugal	92	76
Sweden	91	93
Switzerland	45	48
Turkey	106	104
United Kingdom	22	33
ERP area (excl. Turkey)[6]	66	67
ERP area (incl. Turkey)[6]	68	70

Office of Foreign Agricultural Relations, Apr. 1951.
[1] Five-year average, mostly 1933-34 to 1937-38.
[2] Four-year average 1947-48 to 1950-51.
[3] Western sectors of Berlin excluded prewar, included postwar.
[4] Western sectors of Berlin excluded.
[5] Excluding whale oil produced for export or stocks.
[6] Excluding Luxembourg and Iceland.

Austria, where the energy supply was still approximately 8 percent below the prewar average.

A few additional observations result from closer scrutiny of the figures. It appears that price-weighted food consumption is higher relative to prewar than are per capita energy supplies in Belgium, Denmark, France, Ireland, and Sweden. On the other hand, per capita supplies of energy in relation to prewar are higher than is the value of the food consumed, measured at constant prices, in Austria, West Germany, the Netherlands, Norway, Portugal, and the United Kingdom. The cases of Greece and Italy are not pronounced enough to be definitely put into one group or the other.

For the ERP area as a whole, it appears that, in 1949–50, the quantity-quality index of food supplies per person stood at 94 percent of the prewar average, while the simple calorie index had reached 97 percent of prewar. The area's energy deficit is mostly accounted for by the deficits in Germany and Austria while its quality deficit results from the deficiencies recorded for Germany, Austria, the Netherlands, and the United Kingdom. In Germany and Austria the quality deficit is due to the drop in all livestock products, while in the Netherlands and in the United Kingdom it is mainly a question of the reduction, compared to prewar, in meat consumption. Whole milk consumption per person in the United Kingdom and in the Netherlands greatly exceeds the prewar standard. Cheese and eggs in the United Kingdom and sugar in the Netherlands are about the same as prewar, while sugar in the United Kingdom and cheese and eggs in the Netherlands are below prewar.

On a commodity basis, for the ERP area as a whole, the calorie deficit, compared to prewar, is mainly due to a small over-all deficit in fats and sugar, plus a greater deficit in meat, not fully offset by higher consumption of grain and potatoes. The (larger) qualitative deficit is mainly due to the shortage of meat.

Degrees of Self-Sufficiency

The food self-sufficiency percentages presented in table 3 express the relation between the calorie value of food production and food consumption in the ERP countries. The concept of food production used is actual food output, whether for domestic consumption or for export, *minus* that part of the livestock output which must be attributed to imported feedstuffs. The basis of the self-sufficiency calculations is the data contained in the food balances prepared by OFAR.

The relation between the food production and food consumption figures as given in the balances expresses food self-sufficiency only in the countries in which feed imports are insignificant. But most ERP countries import feedstuffs in sizable amounts, and for those countries the food equivalent of such imported feeds was determined for each year in question. The quantities of livestock products estimated as derived from imported feeds were expressed in terms of calories per person per day and deducted from the production figure of the balances in order to determine the production entirely of domestic agricultural origin. The ratio between this adjusted production figure and the corresponding consumption figure constitutes the self-sufficiency percentage.

Any calculation that attempts to attribute a certain part of a country's livestock production to imported feedstuffs is to a considerable extent arbitrary and its validity is open to question. In the first place, the allocation of imported feedstuffs to various categories of livestock is uncertain. Secondly, the amount of livestock products derived from a certain input of feed cannot be precisely determined and is subject to variation over a period of time, as well as from country to country. Judgment and general knowledge of the situation in a country must to a large extent take the place of definitely established relationships. Nevertheless, the problem has been discussed and dealt with in many places and workable approaches have been developed. The method used here is the one employed and described in "Continental Europe's Wartime Food Balance," *Foreign Agriculture*, April 1943.

The main feedstuffs imported into European countries are oilcake, grains, and bran. The calculations in the 1943 article assumed that oilcake served milk production primarily, while the bulk of the grain found its way into pork, hog fat, and egg production. After conversion of the imports into their digestible protein and starch equivalents, allocation was made accordingly. The conversion of oilcake into milk was based on the assumption that 70 grams of protein produced, on the average, 1 kilogram of milk.[5] The estimates for pork, fat, and eggs,

[5] This ratio rather than the theoretical coefficient of 50 grams of protein per kilogram of milk was thought to apply in actual practice to conditions with which the calculation of a food balance for continental Europe was concerned. It is somewhere in between the theoretical coefficient and that of

on the other hand, were based primarily on the starch equivalent of the imported grains, etc.—with 360 tons of starch equivalent assumed to be required for the production of 100 tons of pork or eggs.[6]

The indicated factors for conversion of feedstuffs into their food equivalent were used as the starting point in calculating production from imported feeds, but were not rigidly adhered to. Deviations were in some cases based on experiments or statements by specialists in the countries concerned, in other cases by a general consideration of all known factors involved. Thus, for those countries where oilcake imports were particularly heavy in relation to cow numbers—countries which now obtain as large milk yields as before the war with much smaller oilcake imports—oilcake was considered to have been less efficiently used than where imports had been lighter. In such cases not 70 grams of imported protein but perhaps 90 or 100 were assumed as used for the production of 1 kilogram of milk before the war. Similarly, the conversion factor of 360 tons of starch equivalent per 100 tons of pork was not always strictly adhered to.

In addition to these geographical variations, variations as between prewar and postwar years were also employed. It was assumed basically that there had been a 10-percent improvement in "feeding efficiency" or "intensity of feed utilization" when comparing postwar with prewar years. In other words, a country which before the war was assumed to have derived 1 kilogram of milk from each 100 grams of protein imported was assumed after the war to obtain 1 kilogram of milk from about 90 grams of protein. However, this improvement in feeding efficiency was not postulated for all countries. (The term "feeding efficiency" or "intensity of feed utilization" is used to denote all practices and influences that determine "feed-input livestock-output" relationships.)

In a few countries, notably Denmark, wartime statistics provide a rough check on the reliability of conclusions reached. A heavy importer of feeds before the war, Denmark was almost completely cut off from feed imports during World War II. Danish agriculture was relatively free from other war-caused disturbing factors, and reliable statistics for the war years are available. Thus, the level to which livestock production fell during World War II in that country gives a rough indication of the amounts of livestock products that had been derived from imported feed in prewar years. This type of check was used in the present study.

A 3-year postwar average self-sufficiency was computed, based on the years 1948–49 to 1950–51, as well as a 4-year postwar average taking in the poor crop year 1947–48, on the theory that there should be included at least one bad year with the 3 years that were favored by good weather. It was the latter set of self-sufficiency percentages which was selected for table 3, together with the corresponding figures for the prewar period.[7]

It was not considered advisable to give food self-sufficiency estimates for individual years. The concept of food self-sufficiency—the ratio of calories provided from domestic resources to the caloric value of consumption—essentially relates to a longer period of time and not to the ups and downs of individual years. It is partly for this reason that we sought to approximate a "postwar level" rather than a series of postwar fluctuations. Another reason is the existence of various and shifting time lags between input and output. Thus, in the calculation of net output, there is a problem connected with the question of making allowance for imported feed: it is the lag in the output of livestock products compared with the importation of the feedstuffs from which they are produced. Imports of feed during any 12-month period are likely to be reflected, in part, in the output of livestock products, not during the same, but during the subsequent, period. Generally, the lags that exist, and shift from year to year, between production as well as importation of feedstuffs and the output of livestock products fall into the category of stocks movements that cannot at present be adequately assessed.

With the exception of the Mediterranean countries (with their rapidly increasing population and meager resources) and Western Germany (with its problem of refugees from the East) as well as Austria, all areas show a greater degree of food self-sufficiency than before the war. Larger crop output for direct food uses as well as a decreased dependence on imported feedstuffs contribute to this result. For the ERP area as a whole (excluding Turkey) the increase in food self-sufficiency is only from 66 percent prewar to 67 percent postwar. This impence on imported feedstuffs contributes to this reduction in the area's dependence on feed imports. In fact, if production from imported feed were counted as domestic, postwar food self-sufficiency would be below prewar—71 as compared with 72 percent.

For a proper evaluation of the achievements that these figures, and particularly the details given in table 3, reveal, it is necessary to keep in mind that self-sufficiency percentages link production with consumption of an increasing population. The fact that in the aggregate the ERP area could improve its food self-sufficiency ratio is certainly remarkable since most countries must now feed considerably larger populations than before the war. On the other hand, it is of course true that food *consumption* was considerably below its prewar per capita level in the early years of the postwar period, so

about 100 grams of protein per kilogram of milk suggested for similar calculations made in Germany.

[6] For further details of the feed-food conversions see *Foreign Agriculture*, April 1943.

[7] While consumption estimates for 1950–51 are not given in tables 1 and 2, preliminary estimates for 1950–51 were included in the self-sufficiency calculations, in order not to weight the average too heavily with the unfavorable season 1947–48.

that production appeared higher in relation to consumption than it would have, had consumption already reached normal proportions.

There can be no doubt that the larger production in many European countries is due to the greater application of fertilizers which are to some extent imported. A higher degree of mechanization also contributes to larger output, but is dependent on imported fuel oils. If it were possible to take these factors into consideration, both prewar and postwar levels of self-sufficiency would be reduced and the postwar period would show a decline compared with the thirties. The increase in the capacity of the countries to supply themselves with basic food energy from purely domestic resources has therefore not lessened their vulnerability to blockade or other restriction of general foreign trade, but rather has shifted their dependence upon foreign sources from agricultural products to industrial supplies for agriculture. On the other hand, there are possibilities of substitution also in the field of industrial supplies.

Glimpses of Ceylon

By HELEN B. HUNERWADEL

On our way home after 2 years in Burma we found we were to have 8 days in Ceylon, a country about which we knew very little.

We expected to spend those days sweltering in tropical heat. The temperature in Colombo must have been about 90° F., but the ocean breeze took the edge off it: and we had two such pleasant days in the city, visiting curio shops and resting beside the beautiful Indian Ocean, that we were encouraged to see something of rural Ceylon.

One guide insisted that we visit the splendid ruins and relics, but our choice was a motor trip to the hill town of Kandy and the Botanical Gardens nearby.

While the trip to Kandy would normally take only about 2½ hours, we were much longer at it. We drove through a fishing village on the edge of a lagoon near Colombo. It was early afternoon, not the time for fishing, and the quaint little fishing vessels with their drab sails bobbed lazily at their moorings. The grassy slopes along the water front were covered by drying nets, and here and there men were mending the torn spots.

Close by, we passed a large covered shed, crowded with people. Most of the men were wearing only a loin cloth, and the women, something that looked like a sari. On inquiry, we learned that the fishermen were selling their morning catch, that buyers from the city came there, and that the fish were auctioned off to the highest bidders. The scene was somewhat reminiscent of the Tennessee tobacco floors during the famous tobacco auctions.

These fisherfolk are unmistakably poor people. Their huts, built for the most part of hand-made brick, daubed with mud, and covered with thatch made from coconut palm, are drab and meager. We were happy to learn that the Government is carrying out plans for improving the lot of these people, but the process is slow.

It seemed odd to us that more than half of Ceylon's fish requirements must be imported. Fishing equipment now in use is picturesque, but inadequate and very primitive. If the fishermen had modern fleets capable of going far enough out to reach the trawling banks where fish are abundant, they could catch enough fish to meet the demands.

On the outskirts of Colombo and in certain villages along the way to Kandy, we became familiar with the scent of coconut oil being processed in many refineries. Here and there, large masses of copra lay drying in the sun. We were told that if it does not dry quickly enough, it becomes rancid.

Coconut culture in the island has been second in economic importance only to tea in recent years, having displaced rubber during the postwar slump in the rubber market. Synthetics and other similar discoveries of recent years have also contributed to the decreased demand for rubber. However, in recent months, with the rising fear of another war, stockpiling of rubber has increased and prices have risen sharply.

We passed several rubber plantations and were surprised to see that some of the large trees were being felled and cut into lengths for firewood. These were trees that had shown themselves to be low producers. In years gone by, when labor was cheap and prices were high, these trees would have been profitable, but they are no longer so. They are now being replaced by budded trees, which will be better producers.

Rubbertrees are tapped in somewhat the same way as pine trees in our Southern States are drained of turpentine. The cut or gash goes around the tree

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like a spiral stairway, the milky-white liquid latex dripping into a small cup made of a half coconut shell. Because a dryish film forms on the top of this fluid in a very short while, laborers must gather it in large containers many times a day. I was surprised to find that I could lift the latex that had dried at the side of the cut and that it was very like a piece of rough, irregular, stretchy rubber. A little farther on, we stopped at one of the rubber factories and saw the liquid latex washed, run through many rollers, dried, rolled again into large, rough yellowish sheets, cut into uniform pieces, and packed for shipping.

In many of the rubber plantations, we noticed that cacao had been thickly planted as a sort of undergrowth. It seems that cacao thrives in partial shade, does not injure the rubber yield, and provides a buffer crop should the rubber market fail—as many planters fear it will. Cacao, though ranking far below coconut and rubber in commercial importance in the island, is grown extensively—both with rubber and by itself.

Our driver told us that the flesh around the cacao beans in the pod is good to eat. He picked a large, ridged yellow pod and opened it for us. The soft pulpy mass around the cacao seeds was sweet and mildly acid, with a pleasant flavor. Because the pulp adheres so closely to the seed, or bean, it must be put through a fermentation process before it can be washed away. Only then can the beans be dried and prepared for market.

Tea is the leading crop of the country, and represents about two-thirds of all exports. We passed one tea planting after another, all on slopes, some very steep and others gradual. We were surprised to see that the land around the tea plants was bare and, for the most part, badly eroded. Later we learned why. It seems that leeches are prevalent on weeds and grasses in Ceylon, and it is difficult to get tea pickers unless the ground is bare. The Government is encouraging contour planting of tea now, and experiments are being made with a low, creeping lespedeza to hold the soil between the contours.

Here and there among the plantations stands a tea factory, where the freshly gathered tea is air-dried for several hours, and then processed into the salable product. We bought some of the broken orange pekoe and learned that it is choice because it contains the tender leaves and only a few stems.

At many places along the way we noticed a rather luxuriant vine with a deeply ridged heart-shaped

Carting tea from factory to market in Ceylon. Tea factories are located in the country, near plantations.

leaf and a fruit that formed a cluster of what looked like miniature green grapes. This was the black-pepper plant. Later, in villages, in temple courtyards, and other unexpected places, we saw shallow baskets of these pepper berries drying in the sun. All of the wild as well as the cultivated pepper plants are being fully exploited. Owing to the present world shortage, pepper is bringing an exceptionally good price.

Rice is as important a food in Ceylon as it is elsewhere in the Far East, and we were not surprised to see many paddy fields. They were often on steep terraces where mechanized equipment would be impractical even if obtainable. Because of the small size of the average rice field, obsolete methods and tools, poor seed, and scarcity and high price of fertilizer, rice production in Ceylon can fill only about one-third of the country's requirements.

We saw mature rice being hand-cut in wisps with a sort of sickle, laid along the bunds to dry, and then carried to crude threshing floors made by scraping the earth and plastering it with manure paste. After the paste has dried to a hard surface, the paddy is placed there and buffaloes or bullocks are driven over it until the grain has been shaken out. It is then winnowed by hand.

In other places, since the Ceylonese make two rice plantings a year, we saw fields being plowed with crude wooden plows drawn by water buffaloes. In still other places, women were transplanting the paddy plants from nursery fields. We were told that

the planting is usually done by a team of eight women, and that an experienced team can plant an acre of paddy a day. The natives say that the yield is better if the rice is transplanted, especially if by women.

We were told that more than 70 percent of Ceylon's food has to be imported. To bring in the revenue necessary to pay for these imports, the economy depends largely on the sale of tea, coconut, and rubber. The Ceylonese recognize the disadvantages of such an economy, and plans are now under way to achieve greater self-sufficiency in food production.

As we passed on through the countryside, its exceptional natural beauty persistently charmed us. Small wonder that the Brahmins called Ceylon "The Resplendent Island!" Finally we reached "Kandy Town," seat of the last Singhalese kings, and paused there to visit its many points of interest and to make it a headquarters from which to take sidetrips to the neighboring Peradeniya Botanical Gardens and the Agricultural School.

The Gardens were well laid out and had some exceptionally interesting features: the avenue of closely planted royal palms; the display of tropical plants, including the insect-eating ones such as the pitcher plant, Venusflytrap, and others that we had studied in botany classes years ago; and many varieties of beautiful tropical orchids.

I believe the spice-bearing plants interested us most because we had never seen spices grow. I held the nutmeg fruit in my hand. It was about the size of a small peach and was broken open in the same manner, revealing a roundish seed in the center which, when dried and grated, is our familiar product. Other small trees produced cinnamon bark; when we bit into the leaf stems, we tasted the characteristic flavor. We saw allspice fruit, citronella, bay-rum trees, clove trees, and many other plants. The Peradeniya School of Agriculture, with its school farm and experimental station, is so located that almost every crop grown on the island can be and is grown there. Sixty students, at a level apparently just above our high school, attend lectures on the usual agricultural subjects and then put their knowledge into actual practice on the farm.

Much work is being done there in the way of modern agricultural experiments and research—not only on crops but also with livestock. We were told that poultry-raising has not been economically worthwhile with feed as expensive as it is, but that the Rhode Island Reds have proved to be the most profitable breed. Experiments are under way with various breeds of cattle to obtain a cross breed that will produce more milk and yet withstand the climate.

They are experimenting also with all sorts of tropical fruits, but are faced with real trouble in the form of flying foxes. Our first introduction to these batlike creatures had been at the Colombo Zoo; and, later, on the way to Kandy, we had passed one area where the trees were literally black with them. These animals are about the size of large fox squirrels; they are covered with reddish-brown hair, and have black ears and feet, and batlike black wings, which fold against the body as they hang upside down in the trees. They fly only at night and are a real pest to farmers and fruit growers.

One area of the school farm is devoted to a "crop museum," where they grow a variety of crops from imported seed to show the students what they are like.

At the school farm we learned of the girl's agricultural training center a few miles away. From what we were told, the students there are taught a home economics course, with emphasis on gardening. We learned that canning is also taught, and that canning is a Government industry in Ceylon, carried out on only a very small scale as yet. There is one mobile unit, one unit at the girl's school at Peradeniya, and one in Colombo. We cut short our stay in Kandy and hurried back to visit the plant in Colombo.

The cannery is located at the rear of the Government's Ceylon Industries shop. Conditions are somewhat crowded, but the cannery is soon to have new and more spacious quarters. The man in charge of the plant told us that they can various fruit juices, pineapple chunks and mangoes, as well as jams. On the day of our visit they were canning orange juice—peeling the oranges and squeezing them out by hand.

The cannery imports flattened tins and then reforms them—a common practice in the East. The present shortage of tinplate is unfortunate, for we are convinced that expansion of the canning industry in the Far East would be of tremendous value. It would be a good way to help raise the standard of living—from a nutritional as well as a monetary standpoint.

We were happy to have had this opportunity to see something of Ceylon. And now, having visited the country, we are even more interested in following the progress of the Government's plan to bring the island's agriculture into better balance by increasing food production and encouraging some industry.

Doubling Living Standards Of Point Four Areas

by **LOUIS H. BEAN**

The growing interest in raising the living standards of underdeveloped areas has popularized one basic fact—agriculture is the main occupation in underdeveloped areas. This interest has brought forth the hope that with United Nations aid it will be possible to double living standards of underdeveloped countries in 10 to 20 years. As the world moves toward that objective and as countries are helped toward greater efficiency in agricultural production and toward industrial opportunities, a larger share of the population of low-income countries will be found in nonagricultural occupations.

What proportion of their populations is likely to be still attached to agriculture when underdeveloped countries succeed in doubling their per capita income? How much would be added to the total incomes of underdeveloped regions if they doubled their per capita income?

The purpose of these questions is not so much to obtain firm, positive answers as to indicate that there is a basic relationship between the current stage of industrialization in various countries and their per capita income and what it implies. Current levels of income, of course, also show the devastating effect of World War II in certain European and Asiatic countries and the limitations of natural resources in others. But my main purpose here is to reveal that the basic relation of agriculture to per capita income is common to all regions.[1]

For a number of countries we now have estimates of both per capita income and percentages of the population in agriculture (see chart).[2]

In the European section of the chart, note the marked lowering of income as you go from industrialized Sweden or Denmark to less industrialized Finland or Poland. For the rest of Europe the contrast is even greater as you go from the highly industrialized United Kingdom or Belgium to less industrialized Portugal or Italy or Yugoslavia. At a still lower income level, a similar contrast can be seen (as of 1949) by going from Germany to Austria to Greece. Except for the greater impact of the war, per capita incomes of these three countries would be about twice as great and about in line with other Western and Central European countries of the same degree of industrialization.

The same degree of industrialization does not necessarily yield the same per capita income. Note that Switzerland, for a variety of economic reasons, enjoys a higher per capita income than do other European countries with a similar agricultural-industrial balance such as Belgium and the Netherlands. The same holds for Ireland. With about the same population percentage in agriculture (19), Switzerland has a per capita income of $849; the Netherlands, $502; and, Germany, $302. Similarly, Finland, Hungary, and Greece (all with about the same percentage in agriculture—50) show incomes of $348, $269, and $128, respectively.

For contrast the comparable data for the United States and Canada are included in the European part of the chart. This gives us three countries, the United States, Canada, and Ireland, with relatively high incomes for their respective stages of industrialization—a contrast likely to remain for many years—and three with relatively low incomes, Germany, Austria, and Greece—a contrast likely to disappear as recovery from war destruction continues and dislocations are rectified.

The marked income differences observed in Latin American countries are those between Chile and Peru, or between Argentina and Brazil or Mexico. These contrasts resemble those for European coun-

[1] For a similar but more comprehensive study of prewar relationships based on Colin Clark's estimates for 1925–34, including also data for the 48 States of the U. S., see the chapter on International Industrialization and Per Capita Income in "Studies in Income and Wealth," National Bureau of Economic Research, Inc., p. v, v. VIII, 1946.

[2] Source of data: "National and Per Capita Incomes, Seventy Countries—1949," Statistical Papers, series E, No. 1, Statistical Office of the United Nations, New York, Oct. 1950, and "Progress Report FAO Index Numbers of Food and Agricultural Production," Food and Agriculture Organization of the United Nations, Nov. 1950.

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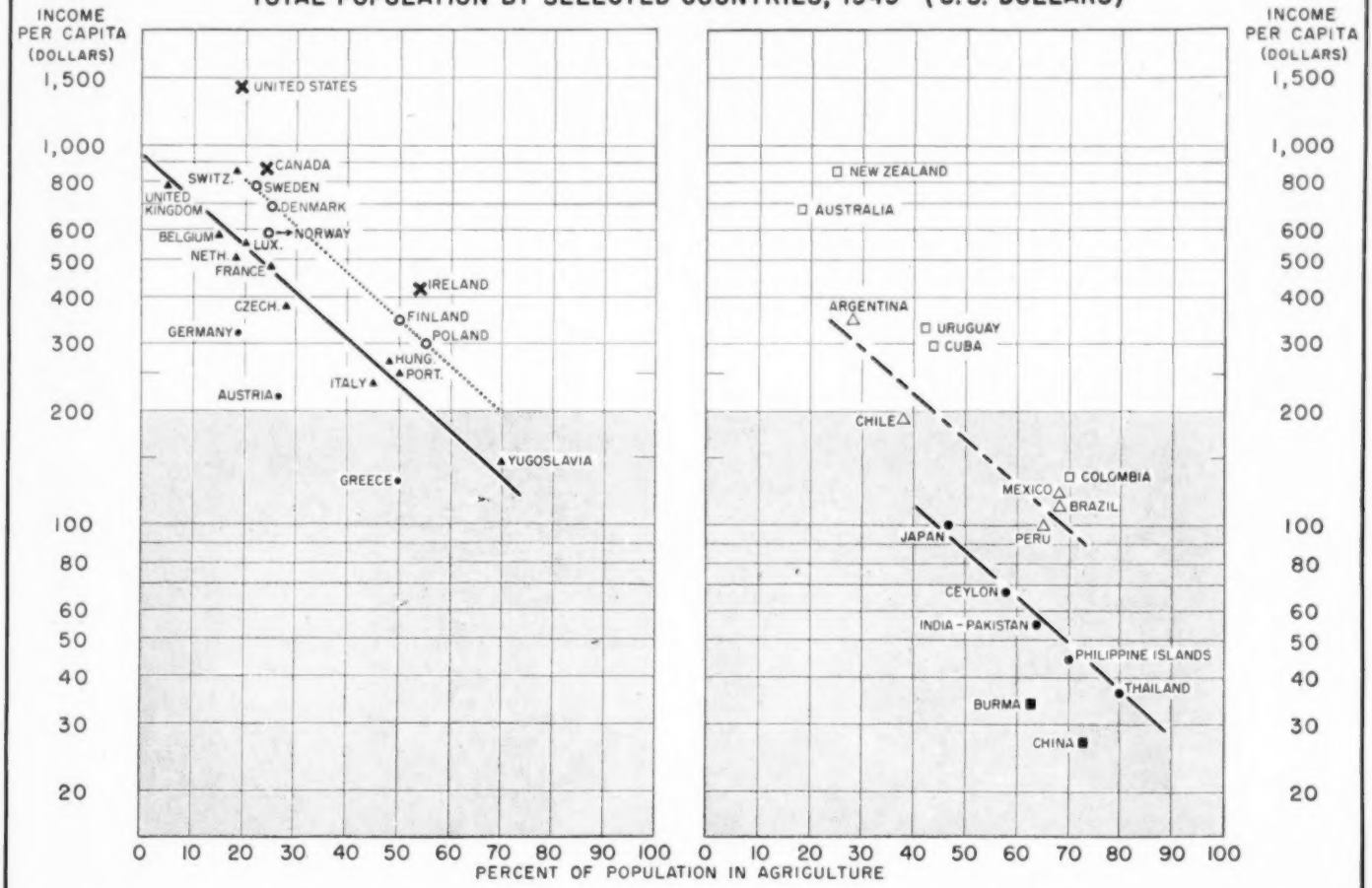
PERCENTAGE OF POPULATION IN AGRICULTURE AND PER CAPITA INCOME OF TOTAL POPULATION BY SELECTED COUNTRIES, 1949 (U.S. DOLLARS)



tries but at a somewhat lower income level. In this part of the world, Uruguay, Cuba, and Colombia, for special conditions relating to their resources and foreign trade, enjoy relatively higher per capita incomes, just as Switzerland does in relation to its neighbors.

The other main contrast is found among Asiatic countries. Per capita income falls off as you go from more highly industrialized Japan to less industrialized Ceylon, India, Pakistan, the Philippines, and Thailand, and it falls off at a still lower level, in the region of greater war devastation, as you go from Burma to China.

The parallel relationships shown for the two groups of European countries, and for the Latin American and Asiatic groups, suggest these broad conclusions:

1. There appears to be a universal relationship between the stage of industrialization and per capita income. Per capita income tends to double as you go from countries with 80 percent of their population in agriculture to those with 55 percent in agriculture. It doubles again as you go from countries with 55 percent in agriculture to those having only 30 percent in agriculture.

2. There are regional differences in living standards or per capita income not associated with the stage of industrialization. For given population percentages in agriculture (excluding the United States, Canada, New Zealand, Australia, and Ireland), per capita income in 1949 dollar exchange rates is highest in the Baltic region. Then in descending order come the countries of Western, Central, and Southern Europe, of South America and the Far East.

3. In any given year, 1949 for example, incomes of certain countries may be relatively low in relation to their past experience and their geographical position. In Europe the incomes of three countries—Germany (postwar), Austria, and Greece—were about half as high as they should have been judging by past experience. The same may be said for Japan, India and Pakistan, the Philippines, and Thailand, and to an even greater extent for Burma and China.

4. Dividing the countries of the world into two groups, those above and those below per capita incomes of $200 to $300, most of the Point Four countries (those needing technical assistance to raise their per capita incomes) will be found in the lower group.

5. In eight European countries that have about 50 percent of their approximately 120 million people in agriculture, per capita income averages about $240. With no increase in population, doubling their per capita income would add about $30 billion per year but the increase will be much greater when this objective is attained, since population is bound to increase.

6. In Latin American countries, with about 60 percent of 150 million people in agriculture, per capita income averages about $160. With no increase in population, doubling their per capita income would add about $25 billion per year as a minimum, but actually the increase would be much greater since population in these countries is increasing at a more rapid rate than in the United States.

7. In the Far East, where about 70 to 75 percent of the total population of well over 1 billion is in agriculture, per capita income averages less than $50. Changing the agricultural-industrial balance in this wide area so as to double per capita income would add at least $50 billion per year. Actually the increase is bound to be a great deal more for here, too, the total population will be substantially increased by the time the objective of doubling per capita income has been attained.

A final word to the technical and nontechnical: The 1949 income and population estimates for some countries are not as statistically reliable as for others, and the income relation of any one country to another is affected by the method used in converting all incomes to a 1949 dollar basis. But this does not materially affect the main conclusion that doubling the living standards of Point Four countries will be accompanied by a marked shift in their agricultural-industrial balance.

Efficient Use of Fertilizers, edited by Vladimir Ignatieff. 182 pp., illus. Food and Agriculture Organization of the United Nations, Washington, 1949. Price $2.00.

"A hungry world needs food" is the starting point of this study which is designed to help agricultural advisers all over the world to spread knowledge about fertilizers and their use for crop production.

This work, which represents the joint efforts of 36 internationally known workers in the fields of soils, soil fertility and management, and fertilizer manufacture and technology, is regarded by agricultural authorities both here and abroad as an extremely valuable contribution to the subject. It is a simple presentation of the basic principles of efficient use of fertilizers, and covers the more significant relations of fertilizers to crop rotation, erosion control, irrigation, drainage, liming, and other practices.

The many illustrations add to its usefulness, as do the bibliographies at the end of each chapter, which point the way to further reading.

Quantities of over 50 for educational purposes may be purchased at half price direct from FAO, Viale delle Terme di Caracalla, Rome, Italy. Other sales are handled by Columbia University Press, 2960 Broadway, New York 27, N. Y.

Netherlands Agricultural Policies —Part I*

by KAREN J. FRIEDMANN

The Netherlands has a highly developed and specialized agriculture, fostered by the density of population, nearness to markets of industrialized nations, and easy transportation by river and sea. Dutch farmers work their land intensively and, in addition, convert imported feedstuffs into livestock products for domestic consumption and for export. Production of bread grains and fats is far from sufficient for domestic needs, while horticulture crops produce great export surpluses. Consequently, the Netherlands is both a large importer and a large exporter of farm products, and, its agriculture, when unprotected, is highly susceptible to world market influences. This susceptibility is reflected in Dutch agricultural policies.

Predepression Policy

With their great dependence on foreign trade the Dutch traditionally were free traders until the economic depression two decades ago shook the very foundations of their economy. The Netherlands tariff of 1862 provided for import duties of 3 to 5 percent ad valorem on half-finished or finished products, while raw materials entered duty-free. New and higher tariffs in 1924 and 1930 still left the rates moderate, and most primary products remained exempted. Even then, the purpose was revenue rather than protection.

Government activities on behalf of agriculture in these predepression days may be classed under the headings, land policy, including land reclamation; quality control of export products; and research and education. The latter is considered outside the scope of this study.

In 1910, for example, the Netherlands introduced the first bill aiming at consolidation of holdings consisting of scattered plots of land. A further step was taken in 1924, when a new act provided that a bare majority of the landowners affected by a particular project can force a reallocation. But not much land was reallocated under this legislation before World War II. In January 1950, however, it was reported that the Government, in cooperation with local farmers' organizations, was engaged in a program of reallocation involving roughly 1 million hectares, or 2.5 million acres. In addition to the consolidation of holdings the program provides for such land improvement as leveling and draining. It has been estimated that this program will increase the productivity of the areas involved by at least 20 percent.

Land reclamation has been a major governmental activity in the Netherlands for centuries. Reclamation of land for agricultural use is essentially of two types: reclamation of moorland and reclamation of land from the sea. In reclaiming the moorland, excessive amounts of peat are first removed, whereupon the land is drained and the remaining peat plowed into the underlying sand, forming a mixture suitable for arable crops.

Dutch projects of reclamation of land from the sea have been extensive. Suffice it to say here that the vast Zuider Zee project, for which the inclosing dam was completed in 1932, remains the greatest single reclamation project. When fully realized it will have added more than half a million acres of fertile land to the area of the Netherlands. During the first few years after reclamation, the land is cultivated for Government account, but eventually it is leased to qualified farmers.

Land prices and rents were subjects for further legislation. During the prosperity period of the twenties, land prices and rents rose to high levels, which proved a heavy burden during the depression. In 1932 and 1933, measures designed to reduce rents were enacted. To keep land values and rentals

* Part II of this article, a discussion of the implications of the Benelux Union, will appear in the July issue of *Foreign Agriculture*.

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within bounds, the Government, operating through local boards, now supervises the sale and lease of all farm lands. These boards also have jurisdiction over disputes between landlords and tenants, with procedures for appeals provided for.

Quality control of butter and cheese exports dates back to the years before World War I. A law of 1929 extended such controls to bacon exports and empowered the Government to issue provisional regulations for other products. Measures of quality control are not now limited to export products but have also been extended to products destined for domestic consumption, including, as in the case of feedstuffs and fertilizers, the raw materials farmers use. A number of agencies have been created to inspect the respective products as to quality, packaging, labeling, etc. Among the more important are the Dairy Quality Bureau, the Netherlands Egg Control Bureau, the Netherlands Bacon Control Bureau, the General Netherlands Inspection Service (seed and seed potatoes), and the Veterinary Service. The agricultural experiment stations analyze feeds and fertilizers for use by Netherlands farmers.

Depression Legislation of the 1930's

Netherlands agriculture was affected by the depression first by a great influx of cheap grains and feedstuffs. This depressed the price level of Dutch crops but worked to the advantage of the country's livestock industry. The output of livestock products therefore increased early in this period, intensifying the problem when the price decline reached this branch of agriculture. At the same time the Netherlands customers limited their takings of Dutch agricultural products through higher tariffs and quota restrictions.

These difficulties encountered by Dutch agriculture were intensified by over-all economic policy, primarily by the decision to maintain the value of the guilder. Had the guilder been devalued at an early date, depression policies on behalf of agriculture would no doubt have been less far-reaching than they actually were. As the situation developed, it was found necessary to control imports of agricultural products and restrict and/or subsidize exports. The ultimate purpose, of course, was to assure the farmers an income on which they could subsist.

During 1931 and 1932 a multitude of crisis measures were enacted without much plan to meet emergency situations for a variety of products. The Agricultural Crisis Act of 1933 consolidated this legislation and centralized its administration. The common features concerning all products were these: Prices of the products in question were raised to a certain level and production was adjusted to sales possibilities at home and abroad. For some export products, such as pork, this meant a reduced production; for such import products as wheat, increased production. But the detailed provisions by which these goals were pursued differed from commodity to commodity. Guaranteed prices as well as direct subsidies and production premiums were utilized. Protection in the form of the so-called import monopoly fees was granted on a number of products, on grains and feedstuffs, for instance—and milling regulations concerning admixture of domestic and foreign wheat stimulated domestic production of this grain. The proceeds from special taxes, as well as permit fees and the monopoly fees, were used to cover at least a part of the expenses incurred in the programs. The Act of 1933, referred to above, also provided for the Agricultural Crisis Fund, into which went these fees and taxes and from which were paid grants and subsidies, differentials between actual and guaranteed prices, etc.

Under this crisis legislation, a system of semigovernmental commodity monopolies was created, which had power to regulate imports and exports, to fix prices, and to levy a tax on imports of their particular products, the so-called monopoly fee already mentioned. As a necessary counterpart to guarantee of prices, the monopolies were granted controls over domestic production. These monopolies were, in other words, the agencies through which the agricultural policies were carried out.

Essentially this set-up has been maintained up to the present although the nature of the problems to be dealt with has undergone great changes. As a consequence of wartime and postwar conditions, the scarcity and high production costs of agricultural products became a major problem. In order to limit possible increases in the cost of living, the Dutch Government has subsidized the farm prices of many food products. These subsidies were, however, reduced drastically in 1948 and, according to present plans, will be cut still further. Since the subsidies are not meant to apply to that part of the production that is sold abroad, exporters of such subsidized commodities must pay a "refund," formerly called an export monopoly fee, corresponding to the subsidy received.

Current Policy

The Netherlands, then, has both the set-up for a very active agricultural policy, with rather detailed regulation of agricultural prices, production, and trade, and the experience of two decades of living under such regulations. The objectives now are somewhat different from those of prewar years and may be stated broadly and briefly as an all-out production effort, in return for which the farmers are entitled to "security of subsistence on well-managed holdings." These are the aims as formulated through consultation between the Government and the National Farmers' Foundation (Stichting voor de Landbouw). This foundation, organized after World War II, is extremely powerful. Its membership consists of the main farm and farm labor organizations and the National Cooperative Council. Widely representative of Dutch farming interests, it wields great influence on Dutch agricultural policy both at the national and international level.[1]

Two outstanding features in the present economic situation are of major importance in determining this policy and the manner in which it is carried out. One is the old problem of a dense and growing population with resulting growing needs for food on the one hand and jobs on the other. The second is the extremely difficult foreign exchange situation with resulting need for maximizing exports and minimizing imports. This problem is essentially an old one, too, differing in degree rather than in kind from that of the 1930's. The present uncertainty of the German market, so essential for Dutch agricultural exports, is a greatly disturbing factor. The Dutch are making determined efforts to meet these problems.

In the all-out production efforts, special emphasis is placed on increased production of domestic livestock feed and more than correspondingly decreased grain and oilcake imports. Actually, the share of imports in the total feed supply has gone down from 21.4 percent in 1935–38 to 11.7 percent in 1948–49. For the year 1949–50 it is estimated at 13 percent. This economy in respect of imported feed is being achieved through (1) higher yields of individual crops; (2) shifts from lower-yielding to higher-yielding crops, with emphasis on fodder crops and potatoes; (3) better grassland management; and (4) more economical feeding practices. It should be borne in mind, however, that part of the increase in feed self-sufficiency through 1948–49 was due to smaller than prewar livestock production.

The hope is that in the long run it will be possible to increase the yields of the grasslands by 80 percent. If and when such goals should be substantially achieved, some areas now in permanent grassland can be plowed up and diverted to arable crops.

In its efforts to achieve these goals the Netherlands Government is not content merely to utilize research, education, and advisory services. A more direct inducement to greater indigenous feed production is present in the feed rationing system. Imported feedstuffs are allocated in such a manner and at such prices that farmers are encouraged to grow the greatest possible amount of feed for their own use. Also, the prices of the final products, milk and pork, are fixed in such a way that farmers find it to their advantage when they use the quantities of concentrates suggested by the Government, and farmers may be forced to change their crop plans in order to reap the benefits of Government programs.

[1] A description of the Foundation is given in H. D. Louwes' article "The Netherlands Farm Workers' Organization," *Foreign Agriculture*, pp. 86–87, Apr. 1950.

Fishery Research and Educational Institutions in North and South America, prepared by Gerald V. Howard and Eileen R. Godfrey, Fisheries Division of the Food and Agriculture Organization of the United Nations, 85 pp., illus., Washington, D. C., 1951.

The Fisheries Division of FAO has been finding out what research is going on throughout the world on fisheries and what government agencies and other institutions are engaging in such research or offering information on the subject. This particular pamphlet summarizes such information for both North and South America, naming the agencies and institutions in each country, outlining their activities, listing the publications they have issued, and giving the names of their senior fishery officers.

Many uses suggest themselves for this directory: To encourage exchange of information on common research problems, to point out "contacts" to countries that want to develop their fisheries, and to guide prospective students to schools that offer specialized training.

Threshing in the East and in the West. Agricultural progress sometimes comes about through very simple advancements. The foot-pedal thresh (above), though an elementary machine, is highly efficient compared to hand-threshing methods (below), still used in much of the world.